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Research paper

Posttraumatic stress disorder and suicidal ideation, plans, and impulses: The mediating role of anxiety sensitivity cognitive concerns among veterans

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ABSTRACT

Background: Although the relationship between posttraumatic stress disorder (PTSD) and suicide has been firmly established, research on underlying mechanisms has been disproportionately low. The cognitive concerns subscale of anxiety sensitivity (AS), which reflects fears of cognitive dyscontrol, has been linked to both PTSD and suicide and thus may serve as an explanatory mechanism between these constructs.

Methods: The sample consisted of 60 male veterans presenting to an outpatient Veteran Affairs (VA) clinic for psychological services. Upon intake, veterans completed a diagnostic interview and brief battery of self-report questionnaires to assist with differential diagnosis and treatment planning.

Results: Results revealed a significant association between PTSD symptom severity and higher suicidality (i.e., ideation, plans, and impulses), even after accounting for relevant demographic and psychological constructs. Moreover, AS cognitive concerns mediated this association.

Limitations: Limitations include the small sample size and cross-sectional nature of the current study.

Conclusions: These findings add considerably to a growing body of literature examining underlying mechanisms that may help to explain the robust associations between PTSD and suicide. Considering the malleable nature of AS cognitive concerns, research is needed to determine the extent to which reductions in this cognitive risk factor are associated with reductions in suicide among at risk samples, such as those included in the present investigation.

1. Introduction

Age-adjusted suicide rates in the United States have increased in recent years (Curtin et al., 2016). As such, suicide is the 10th leading cause of death in the United States (Centers for Disease Control and Prevention, 2010). Previous research has found that death by suicide is strongly predicted by suicidal ideation and attempt history (Kessler et al., 1999). Additionally, emerging evidence supports the role of anxiety in the development of suicidal ideation and attempts. For example, using data collected from the National Comorbidity Survey, Sareen et al. (2005a) found that approximately 70% of individuals with a lifetime history of suicide attempts met criteria for at least one anxiety disorder. Anxiety remains predictive of suicide even after accounting for relevant psychological constructs including depression, substance abuse, and all Axis II diagnoses, further highlighting its value in predicting risk (Cougle et al., 2009; Nepon et al., 2010).

A recent meta-analysis conducted by Bentley et al. (2016) found that the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* anxiety diagnosis that most strongly predicts suicidal ideation and suicide attempt history is posttraumatic stress disorder (PTSD).[1] PTSD is characterized by a constellation of symptoms that develop following exposure to one or more traumatic stressors (American Psychiatric Association, 2013). According to the National Center for PTSD, seven to eight percent of the US population will

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[1] Of note, PTSD was removed from the anxiety disorders chapter within *DSM-5*. However, it has a long-standing history of being considered in the context of these disorders, which is best reflected in the sequential ordering of these chapters.

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develop PTSD at some point in their lifetime. These rates increase exponentially among individuals who, by virtue of their profession, have increased risk of traumatic exposure (Kessler et al., 2005). Thus, it is not surprising that rates of PTSD are higher in military populations (with and without combat exposure) than in the general population (Hoge and Castro, 2012).

A growing body of research indicates that individuals diagnosed with PTSD are more likely to contemplate or attempt suicide compared to those without PTSD (Sareen et al., 2005b, 2007). This association appears to be related to the symptoms of PTSD rather than the experience of trauma. For example, using a trauma exposed sample Pietrzak et al. (2011) found that individuals with PTSD, compared to those without, were two to five times more likely to attempt suicide. Despite these established relations, research on mechanisms underlying the associations between PTSD and suicide is disproportionately low.

One potential mechanism that may help explain this association is Anxiety Sensitivity (AS). AS, defined as an exaggerated fear of anxiety-related sensations (Reiss et al., 1986), is elevated in both PTSD (Taylor et al., 1992) and suicidal individuals (Capron et al., 2012b). AS is composed of three lower-order subfactors related to the fears of physical, cognitive, and social consequences of anxiety (Zinbarg et al., 1997). Interest in these subfactors has rapidly increased since the publication of the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). Specifically, the ASI-3 allows researchers to more reliably measure AS subfactors than previous iterations of the Anxiety Sensitivity Index. Consequently, researchers have found that the AS subfactors are differentially related to various forms of psychopathology (Olthuis et al., 2014). For example, AS physical and social concerns are most strongly associated with fear based disorders including panic disorder and social anxiety disorder, whereas AS cognitive concerns are most strongly associated with distress based disorders including generalized anxiety disorder and mood/trauma related disorders (Olthuis et al., 2014).

Several studies have reported on the relations between AS cognitive concerns and PTSD. For example, Vujanovic et al. (2008) found that AS cognitive concerns were significantly associated with Posttraumatic Diagnostic Scale total and avoidance symptoms subscale scores (above and beyond negative affect) in a large sample (N = 239) of trauma exposed adults. Additionally, Asmundson and Stapleton (2008) found police officers with “probable PTSD” (n = 44) scored significantly higher on the AS cognitive concerns subscale than those without PTSD (n = 94). Raines et al. (2016) recently extended this research by examining the relations between AS subfactors and *DSM, 5th Edition* (*DSM-5;* American Psychiatric Association, 2013) PTSD symptom clusters using a small sample of veterans (N = 50) presenting to the Veteran's Healthcare Administration (VA) for treatment. Results revealed associations between AS cognitive concerns and all four *DSM-5* PTSD symptom clusters.

A parallel line of research has also found associations between AS cognitive concerns and suicide risk. For example, Schmidt et al. (2001) found that the cognitive dimension of AS was significantly associated with suicidal ideation in a group of patients with panic disorder. Similarly, recent research has demonstrated elevated rates of suicidal ideation and suicide attempt history in a number of clinical and community based populations (Capron et al., 2012a, 2012b, 2012c; Oglesby et al., 2015). Given the extant literature demonstrating a relationship between AS cognitive concerns and both PTSD and suicide, it stands to reason that this cognitive risk factor may be one mechanism accounting for the relationship between PTSD and suicide.

The purpose of the proposed study was to examine the relationship between PTSD and suicide, and the potential mediating role of AS cognitive concerns, using an outpatient sample of veterans presenting to a PTSD clinic. Consistent with prior research (Bentley et al., 2016), it was hypothesized that higher PTSD symptom severity would be associated with higher suicidal ideation and risk, even after accounting for relevant demographic (i.e., Caucasian status; Conwell et al., 2002) and psychological constructs (i.e., alcohol and substance use; Borges et al., 2000) as well as depression and anxiety diagnoses. Further, it was hypothesized that this relationship would be indirect through AS cognitive concerns, rather than AS physical or social concerns.

2. Methods

2.1. Participants and procedure

The sample included 60 male veterans, with ages ranging from 23 to 68 (M = 45.20, SD = 12.47), presenting for an intake assessment to an outpatient PTSD and substance use clinic at a large, Southeastern VA clinic. Prior to receiving psychological services, all veterans were assessed for PTSD and substance use and completed a brief battery of self-report questionnaires to assist with diagnostic clarification and treatment planning. Regarding primary diagnosis, 45.0% of the sample met diagnostic criteria for PTSD, 8.4% for an Other Trauma-and-Stressor Related Disorder, 18.4% for a Depressive Disorder, 13.3% for a Substance-Related and Addictive Disorder, and 8.3% for an Anxiety Disorder, with 6.6% missing data. Additionally, 13.3% of the sample concurrently met for a trauma- and stressor-related disorder and a depressive disorder diagnosis regardless of which diagnosis was primary. The racial composition of the sample was as follows: 65.0% African-American and 35.0% Caucasian. Regarding highest level of education obtained, 3.3% completed less than high school, 30.0% completed high school or the equivalent, 56.7% completed some college, 5.0% completed college, 3.3% completed some graduate school, and 1.7% completed a postgraduate degree.

The majority of veterans served in the Army (50.0%), followed by the Navy (15.0%), Marine Corps (11.7%), National Guard (8.3%), Air Force (3.3%), Coast Guard (1.7%), or served in more than one branch (10%). War zone service included Vietnam (11.7%), Operations Desert Storm (ODS; 13.3%), Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF; 41.7%), Other peacekeeping deployments (5.0%), multiple deployments (11.7%) and no deployments (16.6%). Trauma type was as follows: 63.3% combat, 10.0% witnessing another person killed or badly hurt, 10.0% other (e.g., military training related accidents), 3.3% were victims of a serious crime, 1.7% involved in a serious car accident, 1.7% were physically or sexually abused as an adult, and 1.7% were physically or sexually abused as a child, with 8.3% missing data.

3. Measures

3.1. Alcohol use disorders identification test (AUDIT)

The AUDIT is a 10-item self-report questionnaire designed by the World Health Organization to classify individuals with alcohol-related problems (Saunders et al., 1993). Prior research has demonstrated strong psychometric properties for this measure (Babor et al., 2001). Additionally, in the current study the AUDIT displayed great internal consistency (Cronbach's alpha = .93).

3.2. Anxiety sensitivity index-3 (ASI-3)

The ASI-3 is an 18-item self-report questionnaire used to measure fear of and concern about the negative effects of anxious arousal (Taylor et al., 2007). It is composed of three empirically supported subfactors: fear of physical arousal (e.g., "It scares me when my heart beats rapidly"), fear of publicly observable symptoms of anxiety (e.g., "It is important to me not to appear nervous"), and fear of cognitive dyscontrol (e.g., "It scares me when I am unable to keep my mind on a task"). Participants indicate the degree to which they agreed with each item on a five-point Likert scale ranging from zero (Very little) to four (Very much) with higher scores reflecting greater levels of anxiety sensitivity. The ASI-3 has demonstrated sound psychometric properties